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10/022,269	12/20/2001	Phillip D. Neumiller	MESH032	2363

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EXAMINER

JUNTIMA, NITTAYA

ART UNIT PAPER NUMBER

2616

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/022,269

Applicant(s)

NEUMILLER ET AL.

Examiner

Nittaya Juntima

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 4, 5, 10, 11, 13, 14 and 18 is/are ~~withdrawn from consideration~~ *cancelled*.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-9, 12, 15, 17, 18 and 20 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) \
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This action is in response to the amendment filed on 1/17/2006.
2. Claims 4, 5, 10, 11, 13, 14, and 18 were cancelled.

#### ***Claim Objections***

3. Claims 3, 8, 16, and 19 are objected to because of the following informalities:
  - in claim 3, lines 2, 5, 6, and 7, "packets" should be changed to "packet;"  
line 7, "said plurality of realizations of" should be inserted in front of "said;"
  - in claims 8 and 16, line 2, "include" should be changed to "includes;"
  - in claim 19, lines 3, "transmit" should be changed to "transmits."Appropriate correction is required.

#### ***Claims Rejections – 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 2 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2, the limitations "receiving a plurality of realizations of said data packet...via said at least one of said plurality of relay nodes" and "processing said receiving plurality of realizations" are vague and indefinite. It cannot be determined from the claim language how a

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plurality of realizations of said data packet *if* only one of said plurality of relay nodes transmits a CTS to the mobile node and receives said data packet from the mobile node as claimed in claim independent claim 1 from which claim depends. Therefore, the claim is vague and indefinite.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 6, 12, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Srikrishna et al. ("Srikrishna") (US 7,031,293 B1).

Regarding claim 1, Srikrishna teaches a method for transmitting a data packet from a mobile node (I2 in Fig. 5) in a mobile ad-hoc communications network (Fig. 5, see also col. 2, lines 1-7), said data packet being addressed to a destination node (D530, col. 4, lines 4-6, 12-15) in said network, the method comprising:

Transmitting a request to send message (an RTS packet) from said mobile node (I2 in Fig. 5) directed to a plurality of relay nodes (I1 and I3 in Fig. 5) in said network (similar to I1 sending an RTS to I2, it is inherent that when an RTS/CTS mechanism is implement -- I2 has to transmit an RTS to I3 when I2 has to forward the packet originated by S510 to D530, and I2 has to transmit an RTS to I1 when I2 has to forward a packet from D530 to S510, col. 4, lines 12-18 and 44-58).

Receiving by said mobile node (I2) a respective clear to send message (a CTS packet) from at least one of said plurality of relay nodes (at least one of said plurality of relay nodes reads on I3) (similar to I1 receiving a CTS from I2, it is inherent that when an RTS/CTS mechanism is implement -- I3 must respond to I2 with a CTS packet when I3 is free to receive data from I2, col. 4, lines 12-18 and 44-58).

Transmitting said data packet from said mobile node (I2) to said at least one of said plurality of relay nodes (said at least one of said plurality of relay nodes reads on I3) (the packet originated by S510 must be transmitted from I2 to I3 after a CTS from I3 is received by I2, col. 4, lines 12-18 and 44-58).

Transmitting said data packet from each of said at least one of said plurality of relay nodes (each of said at least one of said plurality of relay nodes reads on I3) to said destination node (D530) (the data packet originated by S510 must be relayed by I3 to the destination node D530, col. 4, 12-18 and 44-58).

Regarding claim 6, since I3 is within receiving range of I2 and narrowcast is not further defined, it is inherent that said data packet transmitting step must narrowcast (transmit) said data packet (the data packet originated by S510 to D530) to said at least one of said plurality of relay nodes (said at least one of said plurality of relay nodes I3) in order to forward the packet to the destination node (D530) (col. 4, lines 12-18 and 41-58).

Claims 12 and 15 are mobile node claims corresponding to method claims 1 and 6, respectively, and therefore are rejected under the same reason set forth in the rejection of claims 1 and 6, respectively, with the addition of a transmitter and a controller which must be included in the mobile node (I2 in Fig. 5) in order for the mobile node to perform the claimed functions.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9, 17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Srikrishna et al. ("Srikrishna") (US 7,031,293 B1).

Regarding claims 9 and 17, Srikrishna teaches a mobile ad-hoc communication network (Fig. 5 see also col. 2, lines 1-7), comprising:

A mobile/destination node (S510 reads on a destination node in the direction of communication from D530 to S510, col. 4, lines 4-18).

A relay node (I1) being within broadcast distance of said mobile node (col. 4, lines 4-18).

Said relay node (I1) being adapted to transmit a request to send message (an RTS packet) to said mobile/destination node in the network (it is inherent that when an RTS/CTS mechanism is implemented, I1 must transmit an RTS to S510 when it has a packet from D530 to be relayed to S510, col. 4, lines 4-18 and 41-58).

Said mobile/destination node being adapted to transmit a clear to send message (a CTS packet) to at least one relay node (I1) when said mobile/destination node is capable of receiving a data packet (a data packet originated by D530 and destined to S510) from said at least one relay node (it is inherent that when an RTS/CTS mechanism is implemented, S510 must respond to an RTS from I1 by transmitting a CTS to I1 when it is free to receive data from I1, col. 4, lines 4-18 and 41-58).

Each of said at least one relay node (I1) being adapted to transmit said data packet to said mobile/destination node upon receiving a respective said clear to send message (a CTS) from said mobile/destination node (S510) (I1 must then send a packet originated by D530 to S510 after receiving a CTS from S510, col. 4, lines 4-18 and 41-58).

Srikrishna does not explicitly teach a plurality of relay nodes being within broadcast distances of the mobile node and adapted to transmit an RTS message to said mobile node and the at least one of said plurality of relay nodes as recited in the claims.

However, Srikrishna teaches a mobile ad-hoc network, as shown in Fig. 16, having a plurality of relay nodes, e.g., Z and T (node T is equivalent to node I1 in Fig. 5), being within broadcast distance of a mobile node W (equivalent to S510 in Fig. 5) and being adapted to transmit a RTS message to the mobile node W when each of them has a data addressed to the destination/mobile W to be transmitted to the destination/mobile W, and node T (equivalent to the at least one of said plurality relay nodes) being adapted to receiving a CTS from node W and transmitting a data addressed to the destination/mobile W to the destination/mobile W.

Given the teaching of an RTS/CTS mechanism (col. 4, lines 41-58) and the structure of ad-hoc network having a plurality of relay nodes as shown in Fig. 16, it would have been obvious to one skilled in the art at the time the invention was made to modify the teaching of Srikrishna to incorporate the structure of the network in Fig. 16 such that a plurality of relay nodes (I1 in Fig. 5/node T in Fig. 16 and node Z in Fig. 16) being within broadcast distance of the mobile/destination node (S510 in Fig. 5) and being adapted to transmit an RTS message to said mobile node, and the at least one of said plurality of relay nodes would be included as recited in the claims. The suggestion/motivation to do so would have been to enable the

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destination/mobile node to receive a packet addressed to it when it is free to receive the packet without interference from other nodes located within its broadcast distance using an RTS/CTS mechanism.

Regarding claim 19, Srikrishna teaches that at least one relay node (I1 in Fig. 5) must transmit a data packet (a data packet originated by D530 and destined to S510) to the mobile node (S510) after every one of the at least relay node (every one of the at least relay node reads on I1) has received a respective the CTS message from the mobile node (col. 4, lines 12-18 and 49-58).

Srikrishna does not teaches the at least one said plurality of relay nodes as recited in the claim. However, Srikrishna teaches a mobile ad-hoc network, as shown in Fig. 16, having a plurality of relay nodes, e.g., Z and T (node T is equivalent to node I1 in Fig. 5), being within broadcast distance of a mobile node W (equivalent to S510 in Fig. 5) and being adapted to transmit a RTS message to the mobile node W when each of them has a data addressed to the destination/mobile W to be transmitted to the destination/mobile W, and node T (equivalent to the at least one of said plurality relay nodes) being adapted to receiving a CTS from node W and transmitting a data addressed to the destination/mobile W to the destination/mobile W.

Therefore, given the teaching of an RTS/CTS mechanism (col. 4, lines 41-58) and the structure of ad-hoc network having a plurality of relay nodes as shown in Fig. 16, it would have been obvious to one skilled in the art at the time the invention was made to modify the teaching of Srikrishna to incorporate the structure of the network in Fig. 16 and the plurality of relay nodes such that the at least one of said plurality of relay nodes (I1 in Fig. 5/node T in Fig. 16 and node Z in Fig. 16) would be included as recited in the claims. The suggestion/motivation to do

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so would have been to enable the destination/mobile node to receive a packet addressed to it when it is free to receive the packet without interference from other nodes located within its broadcast distance using an RTS/CTS mechanism.

Regarding claim 20, Srikrishna teaches that one relay node in the mobile ad-hoc communications network of Fig. 5 is mobile (I1 in Fig. 5, col. 4, lines 4-6, see also col. 2, lines 1-7).

Srikrishna does not explicitly teach that at least one of said plurality of relay nodes in the mobile ad-hoc communications network of Fig. 5 is mobile.

However, Srikrishna further teaches a plurality of relay nodes, e.g., Z and T (node T is equivalent to node I1 in Fig. 5) in a mobile ad-hoc network of Fig. 16 is mobile.

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify the teaching of Srikrishna to include at least one mobile node of a plurality of relay nodes such that at least one of said plurality of relay nodes in the mobile ad-hoc communications network of Fig. 5 would be mobile such that at least one node would be portable and not fixed to one particular location over a period of time as its user moves around the ad-hoc network.

*Allowable subject matter*

10. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claims 2-3 and 7-8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

### *Conclusion*

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nittaya Juntima whose telephone number is 571-272-3120. The examiner can normally be reached on Monday through Friday, 8:00 A.M - 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on 571-272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nittaya Juntima

August 4, 2006

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